Baryon asymmetry from Barrow entropy: theoretical predictions and observational constraints.

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We investigate the generation of baryon asymmetry from the corrections brought about in the Friedmann equations due to Barrow entropy, which is a quantum-gravitational driven deformation of the standard Bekenstein-Hawking entropy-area law. In particular, by applying the gravity-thermodynamics conjecture one obtains extra terms in the Friedmann equations that change the Hubble function evolution during the radiation-dominated epoch. Hence, even in the case of standard coupling between the Ricci scalar and baryon current they can lead to a non-zero baryon asymmetry. In order to match observations we find that the Barrow exponent should lie in the interval $0.005 \leq \Delta \leq 0.008$, which corresponds to a slight deviation from the standard Bekenstein-Hawking entropy. The upper bound is tighter than the one of other observational constraints, however the interesting feature is that in the present analysis we obtain a non-zero lower bound. Nevertheless, this lower bound would disappear if the baryon asymmetry in Barrow-modified cosmology is generated by other mechanisms, not related to the Barrow modification.